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July 17, 1954

VOL. 66, NO. [illegible]

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Ancient American

See Page 35

A SCIENCE SERVICE PUBLICATION

Practical World Language

Interlingua is a new auxiliary tongue for all the world, a natural language with regular, simplified grammar that has root words from national languages.

▶ FOR CENTURIES men have dreamed of an international language whose words and sounds everyone could understand no matter what native tongue it used every day.

In the last century over 300 international languages have been invented. Some of these like Esperanto, Ido, and Occidental have enthusiastic devotees and even considerable literatures. But no world language has as yet become an international tool for communication and understanding.

A new international language is making its bow. It is not really new in the words that it uses. It is rooted in many languages of the world. The troublesome intricacies of grammar have been discarded. There is only one verb form in each tense, and nouns, adjectives and verbs do not agree as they must in some more complex languages.

Interlingua is the name of this new international language.

Not Overnight Creation

Interlingua is no overnight creation of one linguist or even one group of linguists. No one sat down and theorized as to what an international language should be. Instead three decades ago, in 1924, an ambassador-to-be, a chemist, several radio engineers, several educators, editors and linguistic experts started a long and detailed inquiry into what an international language should be.

Dr. Frederick G. Cottrell and Ambassador and Mrs. Dave Hennen Morris inspired a distinguished group to cooperate in the International Auxiliary Language Association, suggested by the International Research Council and financially supported by the Research Corporation, Mrs. Morris and others. In 1953 IALA asked Science Service to carry on the application of Interlingua, which is being done from offices at 80 E. 11th St., New York City, with Dr. Alexander Gode as chief.

Now this work on an international auxiliary language has progressed from the stage of research and theory to a practical auxiliary language ready to be used to bring order into the chaos of world tongues.

Interlingua is going to work in various ways. Businessmen are beginning to use it in writing their letters. Pamphlets for world distribution eliminate the need for a dozen linguistic versions by being written in Interlingua. Interlingua abstracts are being used in journals of international circulation in order to make the material available to all readers without the necessity of costly multiple translations into various national languages.

Among the journals that are using Interlingua abstracts are: "Blood, The Journal of Hematology," "The Quarterly Bulletin of Sea View Hospital," "A Journal of Tuberculosis and Chronic Pulmonary Diseases," and the "Journal of Dental Medicine." Two journals appear published completely in Interlingua—"Spectroscopia Molecular," monthly, published by Dr. Forrest F. Cleveland, Illinois Institute of Technology, Chicago, Ill., and "Scientia International," monthly edition in Interlingua of SCIENCE NEWS LETTER, published by Science Service, 1719 N Street, N.W., Washington 6, D. C. Abstracts of the communications to the 2nd World Congress of Cardiology, Washington, D. C., September 12 to 15, 1954, are presented in Interlingua.

Science Service Interlingua Division will cooperate with editors of journals and conferences in similarly applying Interlingua to their international communications.

The amazing thing about Interlingua is that the average American looking at it thinks at first glance that it is Spanish or perhaps French or Italian. It is very easy to read for anyone who knows a little of another language and even those who feel that they have neglected foreign languages find themselves understanding the gist of it at sight.

A Spanish-speaking person is likely to say, as he reads it with fluency, "What funny Spanish!" The Frenchman and the Italian will find Interlingua quite familiar. Chinese, Japanese, Arabs, and others who speak Oriental languages will find pleasing the lack of difficulties with grammar.

There is good reason why Interlingua seems so familiar to those who know something about national languages. It is developed from the consensus of three major sources of naturally international words. It uses the vocabulary of science and technology which is common to almost all the languages of the world, both East and West. It uses English roots where these are common to other languages. It has borrowed fundamentally from the Romance languages, Spanish, French, Italian, Portuguese, etc.

Millions will find the Interlingua vocabulary basically familiar to them, for it is not a new artificial language, but a natural language without being a national language.

For those who feel that peace in the world will come closer if peoples talk to peoples in a language that all men understand, Interlingua has great emotional as well as intellectual appeal.

In the early stages of the use of the new language most of its use is likely to be written. In writing Interlingua the bother of complex grammar does not get in the way of expression.

Example of Interlingua

Interlingua does not look too strange to eyes accustomed to reading English, and it reads relatively easily, as demonstrated by this excerpt:

Energia es necessari pro toto que occurre in le mundo. In tempores passate le plu grande parte del energia applicate esseva fornite per le fortia muscular del homines e del animales domestic.

Hodie carbon, petroleo, aqua, e ligno nos da le grosso del fortia motor. Vostre musculos e mies es exempte de labor nimis dur.

Fundamentalmente toto le energia de nostre terra veni del sol. Le calor e le lumine del sol—octo minutas distante de nos in tempore de viage del radiation—es cosa vital.

Now here are the three paragraphs above in their original English.

Energy is necessary for everything that happens in the world. In olden days, most of the applied energy was furnished by the muscle and brawn of men and domesticated animals.

Today coal, oil, water and wood give us our gross power. Your muscle and mine are spared from working too hard.

Basically all the energy of this earth of ours comes from the sun. The heat and light of the sun, eight minutes away from us measured by radiation's travel time, is a matter of life.

Interlingua Books Available

While Interlingua can be read with little difficulty by almost anyone, books are available which will give a formal acquaintanceship with this international language. The following books are recommended and can be obtained, postpaid, at the prices indicated, from the Retail Book Department, Science News Letter, 1719 N Street, N.W., Washington 6, D. C.

For an amusing introduction to Interlingua, read INTERLINGUA A PRIMA VISTA (Interlingua At Sight)—Alexander Gode—*Storm*, 82 p., illus., $2.00 Pictured explanations and without any English text at all allow the beginner to learn Interlingua. Pronunciation table and seven-language list of grammatical words are included. This book is in the same style as the very successful SPANISH AT SIGHT.

Enrich your vocabulary with the 27,000 word INTERLINGUA-ENGLISH DICTIONARY — prepared by Alexander Gode and Hugh E. Blair —*Storm*—411 p., $5.00. An important aid in reading, writing and speaking Interlingua. This dictionary contains a liberal, all-purpose vocabulary including abundant selections from the terminology of many special fields.

Master Interlingua's easy construction with the INTERLINGUA GRAMMAR—prepared by Alexander Gode and Hugh E. Blair—*Storm*—118 p., $3.50. This valuable book enables you to master Interlingua completely in a fraction of the time it takes normally to learn only one of the many foreign languages Interlingua contains.

These are the standard books on this new tool for international understanding.

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Inquiries about Interlingua are invited and cooperation in the application of this auxiliary language is desired.

ARCHAEOLOGY

Oldest American Skull

Bones of most ancient American yet known discovered in Texas. He predated Folsom Man, whose remains have never been found, by 2,000 to 10,000 years.

See Front Cover

▶ THE MOST ancient American, whose skull was found at a prehistoric water hole near Midland, Texas, and now rests at the Smithsonian Institution in Washington, was probably a human in early middle age, with a long, narrow head.

The sex is not clearly shown, but was most probably male.

This is the judgment of Dr. T. Dale Stewart, physical anthropologist at the Smithsonian, who has fitted the skull fragments together. The skull fragments were found by an amateur archaeologist, Keith Glasscock, of Pampa, Texas.

Dr. Stewart is shown on the cover of this week's SCIENCE NEWS LETTER with the pieced-together skull. For comparison, the skull of a modern Indian is suspended in the background.

The ancient skull, which has been dated by geological evidence as at least 12,000 and possibly as much as 20,000 years old, is nevertheless not different from the skull of a modern Indian, according to Dr. Stewart. For this reason, Dr. Stewart believes that the older date may be too far back.

"If the skull is 20,000 years old, you might expect evolution to have brought about more change," Dr. Stewart has stated.

The teeth of the first American show considerable wear, Dr. Stewart said. This would indicate that our earliest ancestor lived on a harsh diet. He probably did not eat meat, but may have lived on hard berries and tough vegetable foods.

Although his bones were found at a prehistoric water hole in company with the bones of a large number of now extinct animals, there was no evidence that the animals were killed by man. It may have been the other way around, Dr. Stewart speculates. The ancient man may have been killed by one of the animals he disturbed drinking there.

The bone fragments were found lying on top of the ground where they had been exposed by action of the wind blowing away the overlying soil. With the bones were found stone spear points and tools known to be the work of Folsom Man. At first, the bones were thought to be those of Folsom Man.

Even then, the discovery was very exciting to anthropologists because, although the tools of Folsom Man have been known for some time, no human remains have ever been found in association with these 10,000- or 12,000-year-old instruments.

Later geological study of the site revealed, however, that the entire Folsom layer had blown away and that the heavy stone objects from the Folsom layer had dropped down into the underlying layer of gray soil where the skull fragments lay buried.

Between the gray soil of the ancient American and the later Folsom layer there had been a layer of red dirt indicative of a long period of severe drought. It was after the drought had come to an end, that Folsom Man entered on the scene.

Dr. F. J. McClure of the National Institute of Dental Research ran fluorine tests on the human bones and prehistoric animal bones discovered at the same site. He found that the animal and human bones were of relatively the same age. They had all absorbed 0.7% of fluorine, compared with 0.02% for a modern rabbit found in the same soil. Dr. McClure also found that the ancient bones had a high ash content, showing that they are fossil bones.

Anthropologists who studied the bones and the site in which they were found are Dr. Fred Wendorf of the New Mexico Laboratory of Anthropology and Dr. Alex Krieger of the University of Texas.

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• RADIO

Saturday, July 24, 1954, 3:15-3:30 p.m. EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Charles Glen King, scientific director, Nutrition Foundation, New York, will discuss "The Foundations of Our Nutrition."

MEDICINE

New Drugs Not Guilty Of Causing Intestinal Ill

▶ NEW DRUGS for combating bacteria are exonerated from causing a serious inflammation of the gastrointestinal tract that is involved in deaths following operations.

An inquiry by a Mayo Clinic group in Rochester, Minn., shows that, in the Clinic records, pseudomembranous enterocolitis occured about as frequently as now in the days when no antibacterial drugs were used. Some doctors had believed that a new disease had been created by the use of the new drugs.

In 14 years ending in 1934 there were 45 cases, compared with 49 cases in the same number of years ending in 1952. Autopsies showed that about half of the cases involved carcinoma of the colon.

The Mayo Foundation physicians reporting were Drs. Jacqueline D. Pettet, Archie H. Baggenstoss, Edward S. Judd, Jr., and William H. Dearing.

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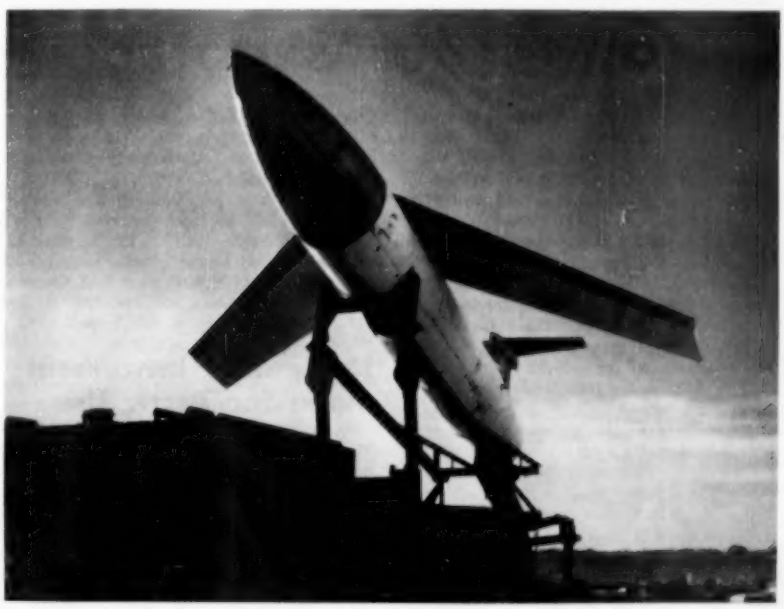

FOR EUROPEAN DEFENSE—This Martin-made B-61 Matador rests on its launching platform ready to wreak destruction on an intruding airplane. A second pilotless bomber squadron will go to Europe this fall to be stationed in west Germany, the U. S. Air Force has announced. The first overseas Matador squadron is now at Bitburg, Germany.

ASTRONOMY

Nova Among New Objects

► A NOVA, or new star, blazed forth in the heavens the night of July 4-5, to give bright celestial fireworks.

The nova is in the constellation of Scorpio, the scorpion, visible low on the southern horizon in the early evening hours. Now of magnitude seven and a half, it is just a bit fainter than the sixth magnitude that marks the dimmest stars visible to the naked eye. It can be seen with binoculars or a small telescope, however.

Three nights prior to the Fourth of July, there were no stars visible brighter than magnitude 13 at the spot where the nova blazed forth. Thus the new star increased at least 400 times in brightness in three days, and it may have flared up as much as 10,000 times in brightness.

The nova was discovered by Guillermo Haro and Lauro Herrara of the Observatorio Astrofisico Nacional, Tonanzintla, Puebla, Mexico. From this area, the constellation of Scorpio is nearly overhead. The astronomers report the nova's position as 17 hours, 50 minutes in right ascension, minus 36 degrees 15 seconds in declination, based on the 1875 equinox.

Because the constellation is quite far south, only those who live south of the 40th parallel, about on a line from Philadelphia to Denver, can see the nova when away from city lights.

About 100 novae are believed to occur in our Milky Way galaxy every year, but only a few of these are spotted.

News of the nova's discovery was bulletined to astronomers across the country by Harvard College Observatory, clearing house for astronomical observation in the Western Hemisphere.

Harvard astronomers also reported that the astronomer Abbott of Athens Observatory, Greece, has found a new object in the southwestern sky, in the constellation of Virgo, the virgin, very close to the planet Saturn.

The Abbott object is the second object discovered in this region of the sky in less than two weeks.

Two European astronomers have independently discovered the new comet in the constellation of Virgo, the virgin. (See SNL, July 10, p. 27.)

The independent discovery was made jointly by astronomers L. Kresak and M. Vozarova, both of Skalnate Pleso Observatory in Czechoslovakia, who spotted the comet on June 30, one day after it was found by Leslie C. Peltier of Delphos, Ohio.

The two European astronomers report the comet is of tenth magnitude, Mlle. J. M. Vinter Hansen of Copenhagen cabled Harvard College Observatory.

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TECHNOLOGY

Detonator for Sabotage

► DETAILS OF an ingenious detonator widely used in sabotage in World War II have recently been revealed with the announcement that Canadian physicist A. J. G. Langley has been given a cash award by Great Britain.

The miniature "time pencil" detonator invented by Mr. Langley, who did research for the British Navy throughout the war and now lives in Ottawa, was made by the million. The Royal Commission on Awards to Inventors has recognized the value of the invention to the Allies.

Only five inches long and as thin as a pencil, the tiny detonator is handy to secrete and carry. It operates very simply. It is detonated by a spring held in restraint by a wire. This wire passes through a thin-walled metal chamber containing a vial of copper chloride solution.

When the soft chamber walls are crushed between the fingers, the glass breaks, and the copper chloride solution eats through the release wire. By varying the concentration of copper chloride, the explosion can be timed anywhere between 30 minutes and 24 hours after the vial is crushed.

Over 15,000,000 "time pencil" detonators were made during the war. They were secretly delivered to saboteurs throughout Europe, who attached them to dynamite and many types of bombs. With a chamber of magnesium or aluminum, they were also used as incendiaries.

Since the war, Mr. Langley has been director of scientific intelligence at Canada's Defense Research Board. He is now executive assistant to the general manager of Computing Devices of Canada Ltd., Ottawa.

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TECHNOLOGY

Navigation Instrument Made for Arctic Use

► A NAVIGATIONAL instrument that is not fooled when the sun sets has been developed for the Air Force and Navy to use in the Arctic where the sun can wheel around all day without breaking over the horizon.

Believed to be a valuable instrument for commercial airlines now charting great-circle paths to Europe over Arctic wastes, the "Sky Compass" works on polarized light from the sun. This light can be present even though the sun has set.

In latitudes above 70 degrees, standard sextants cannot be used satisfactorily for navigation because they depend upon a sun sighting. At night, they work on the planets or the stars. However, in the Arctic twilight, the sun may be below the horizon, yet there may be so much light that stars and planets are obscured. Magnetic compasses also are unreliable in this area.

The new device was developed by the Kollsman Instrument Corporation, New York. The airplane navigator looks into a periscope-like device and rotates the instrument. He sees changing patterns as he watches, and when the field view suddenly goes gray, he has reached the "match point," which permits him to read the plane's true heading.

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ASTRONOMY

Young Stellar Twins

Yerkes astronomers discover two of the youngest stars in the Milky Way galaxy, rushing away from their birthplace with equally high speeds but in opposite directions.

➤ YOUNG STELLAR twins behaving as if they have had a violent spat and never want to see each other again have been spotted in the heavens by astronomers.

The twin stars were born in the Orion Nebula some 2,600,000 years ago, making them among the youngest stars in the Milky Way galaxy. This is the first time astronomers have detected such a twin birth in our galaxy.

Since the two stars have very high speeds, exactly equal but in opposite directions, they could have been born in a giant explosion of some kind. They might be fragments escaping from a stellar catastrophe in some not yet understood fashion.

With respect to their place of birth, the young stars are dashing away from each other at the rate of 76 miles a second. The speed of other stars of the same type in the Orion group is only about five miles per second.

From their motions now, astronomers can predict where the two have come from. About 2,600,000 years ago, Drs. A. Blaauw and W. W. Morgan of Yerkes Observatory calculate, they were both at a place where there is a lot of interstellar material, the Orion Nebula. This, they believe, is where the stars were formed, and they have been rushing away from each other since then, until now they are about 6,000 million million miles from each other.

Such recent formation of stars in a cloud of interstellar material is in line with the theory of Drs. H. Bondi and T. Gold of Cambridge University, England, that there is continual creation of matter in the universe.

This suggestion is still being hotly debated by scientists. Drs. Blaauw and Morgan point out that further study of early-type stars such as the present strange pair might throw some light on stellar evolution.

Astronomers know the two stars as "mu Columbae" and "AE Aurigae." These names tab the first as a rather faint star in the constellation of Columba, the dove, and the second as a certain variable in the constellation of Auriga, the charioteer.

The Great Nebula of Orion, in the familiar winter constellation, is the middle of the three faint stars in a row that form this hypothetical warrior's sword. The Great Nebula of Orion is the biggest and brightest of the nebulae, visible to the naked eye as a hazy blur.

Dr. D. L. Harris of the Lowell Observatory, Flagstaff, Ariz., has measured the color of mu Columbae. Although the star is some 12,000 million million miles from the earth, there is remarkably little absorption of its light across all that space, Drs. Blaauw and Morgan report in the *Astrophysical Journal* (May).

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MEDICINE

Use BAL to Save Lives

➤ THE WAR gas antidote, dimercaprol, better known as BAL, short for British Anti-Lewisite, is now credited with saving the lives of several persons poisoned by nickel carbonyl, and with helping toward the recovery of many others.

This appears in what is believed to be the first report of the use of BAL in nickel poisoning, made by Drs. F. William Sunderman and John F. Kincaid of Jefferson Medical College and of Rohm and Haas Company, Philadelphia, in the *Journal of the American Medical Association* (July 3).

The war gas antidote was given to 32 of the 100 men exposed to nickel carbonyl during repair of a reactor in an oxo plant of one of the large oil refineries in Texas. Of the 32 given BAL, 31 survived.

Following the BAL treatment there was an increased excretion of nickel in the urine and a marked decrease in concentration of nickel in the blood.

Of the 100 persons exposed, 31 were so sick they had to be sent to the hospital and two of these died.

Only one of the 32 patients given BAL was treated promptly. This was a chemist who developed acute symptoms of nickel poisoning the evening after exposure and was started on BAL treatment the following day. In the other cases, BAL treatment was not started until five or more days after exposure to the poisonous fumes.

A feature of nickel carbonyl poisoning is that the first symptoms, generally headache and dizziness, are usually mild and disappear as soon as the victim is removed to uncontaminated air. This is true even when the victim has gotten so big a dose of the fumes that he subsequently dies.

From ten hours to eight days later, a paroxysm of coughing heralds development of the delayed and more severe reactions. These include extreme weakness and fatigue and labored breathing.

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TINY AMPLIFIER—In spite of its extremely small size, the core of this copper-wound doughnut is a very sensitive amplifier of weak energy signals.

ELECTRONICS

Midget Metal Doughnut Masters Big Machines

➤ A TINY metal doughnut smaller than a shirt button has been made the successful master of mammoth machines.

It is a magnetic amplifier and uses pulses of electricity. General Electric engineers said it is highly sensitive to temperature changes. It will react when someone lights a cigarette in the same room with it.

The "Mighty Midget" consists of two fine copper wires wound on a magnetic core. Several units are hooked together to boost a tiny signal to a level that can be used by ordinary magnetic amplifiers, such as the ones in control systems of jet planes, rockets and electronic computers.

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ARCHAEOLOGY

Find Canal System of 5000 B.C. Mesopotamia

➤ A CANAL system, 100 miles long, that paralleled the Euphrates River in ancient Mesopotamia has been uncovered by scientists after having been hidden by desert sands for 6,000 years.

The find was announced by Prof. Albrecht Goetze of Yale, also director of the Baghdad School of the American Schools of Oriental Research.

The canals, discovered during an expedition to Iraq headed by Thorkild Jacobsen of the University of Chicago's Oriental Institute, furnished water for cultivated areas which supported the Mespotamian civilization of 4000 to 5000 B.C. The canals also were used for traveling from one town to another.

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MEDICINE

Drug Makes "Dead" Man's Heart Beat

▶ A POWERFUL new drug to save the lives of people whose hearts stop beating on the operating table has given "immediate and dramatic" results in one case, two Arizona doctors have reported.

The drug, called Levophed by its manufacturer, Winthrop-Stearns Inc. of New York, was injected into the right ventricle of the heart of a 26-year-old man who had been "dead" more than four minutes. His heart resumed beating immediately, Drs. Frederick A. Shannon and William N. Henry of Wickenburg, Ariz., state.

The compound belongs to the class of drugs called pressor amines, which act by constricting the blood vessels. It has previously proved life-saving in its ability to elevate blood pressure from the shock level accompanying a severe heart attack.

Of great significance to the Arizona surgeons was the fact the patient recovered completely and was back driving a truck less than two months after the operation. Some doctors believe the brain cannot survive more than three minutes after the heart stops beating without suffering permanent damage.

When the patient's heart failed suddenly during the closing of an incision following an appendectomy, the doctors started forced respiration with oxygen. Three minutes later, the chest was opened to permit massage of his heart, and then a large dose of Levophed was injected.

The patient began to breathe in the next ten minutes. With the exception of a brief period of excitability and moodiness, his recovery was complete, the doctors state.

Drs. Shannon and Henry report their use of the powerful heart-stimulating drug on a clinically "dead" man in *Arizona Medicine* (July).

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MEDICINE

Doctor Reads Palm To Judge Anemia

▶ WHEN THE doctor wonders how severely anemic a pale patient is, he can find out by doing a bit of palm reading. Unless the anemia is severe, the skin creases across the palm will retain their bright pink or reddish pink color, no matter how pale the skin between may be.

When this color is lost from the skin creases, the hemoglobin is likely to be below seven grams per 100 milliliters of blood, or less than half the normal value, Dr. Jacob J. Silverman of the Staten Island Hospital, New York, reports in the *Journal of the American Medical Association* (July 3).

In tests on 1,500 patients, Dr. Silverman found this simple bedside test gave "remarkably accurate" results when checked against laboratory tests.

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"GAMES" AS TEACHERS—A comfortable approach to solving arithmetic problems is taken by eight-year-old Eric Newhall, a third-grade pupil at Agassiz School, Cambridge, Mass., who is using a mechanical device developed by Dr. B. F. Skinner of Harvard University to aid teaching. A ringing bell immediately informs him when he has given the correct answer to his problem. He learns, yet his teacher is relieved of the tedious correction of papers.

GENERAL SCIENCE

Teaching by Machine

▶ A MACHINE for teaching arithmetic, spelling and reading while at the same time serving as an intriguing toy for the child has been developed by Dr. B. F. Skinner, professor of psychology at Harvard University.

Experiments with rats and pigeons have shown Dr. Skinner that efficient learning requires that response to a problem be immediately followed by what the psychologist calls a "reinforcement."

For the rat who makes the correct turning in a maze, the reinforcement might be a pellet of food. The pigeon who pecks at the right key of a "slot machine" is reinforced by a tasty tidbit.

For a child working out an arithmetic problem, it is often enough reinforcement for him to receive a reassurance that he has the right answer. However, to be effective the reinforcement for either animal or child must follow right away on the answer.

On Prof. Skinner's machine, the child reads his problem printed on a paper tape visible through a window on top of the box-like device about the size of a small record player.

The child indicates his answer by moving sliders upon which the digits from 0 to 9 are printed. When he has set his answer he turns a knob.

If the answer is correct, he is rewarded by the ringing of a bell. If he is wrong, the knob does not turn freely. He must turn it back and set a new try at the answer.

When he gets it right, the bell rings and the knob turns up a new problem. By this device the child is aided in learning to figure and the teacher is relieved of the time-wasting, temper-trying task of correcting stacks of arithmetic papers.

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ANIMAL NUTRITION

Sheep Diet Affects Wool Fiber Strength

▶ SUCH PHYSICAL properties of wool fibers as strength and stretchability can be changed by changing the sheep's diet, Drs. G. L. Clark and V. E. Buhrke of the University of Illinois have discovered.

Adding sulfur to the sheep's diet, for example, changes the rate at which a fiber that has been stretched goes back to its original size, they report in *Science* (July 2).

Using radioactive sulfur as a tracer, scientists had previously found that sulfur in the diet of sheep gets into body chemical reactions and appears in the wool within two weeks.

In the new tests, the Illinois scientists found that as sulfur is added to the sheep's diet, there is a greater tendency for stretched wool fibers to keep their extended configuration and to resist relaxation after stretching is stopped.

Whether or not adding sulfur to the sheep's diet would produce more satisfactory wool for suits and coats, the finding that changes of the diet produce physical and chemical changes in the wool is considered significant.

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PHYSICS

Annihilation of Matter

Antiproton from outer space, with incredibly high energy of 10,000,000,000 electron volts, produces a pure photon shower in a most unusual cosmic ray event.

► ANNIHILATION OF matter seems to have been observed in a great burst of cosmic ray energy.

Prof. Marcel Schein and colleagues of the University of Chicago's department of physics have reported discovering the first case of an extraordinary "pure photon shower" in cosmic rays at 100,000 feet altitude.

Since no charged particles were observed, Prof. Schein assumes that it is due to an annihilation process of an antiproton from outer space with the incredibly high energy of more than ten million billion electron volts (10^{16} ev.)

This kind of happening is quite novel. Nothing like it has been reported before. The energy is higher than anything that has been seen directly. Scientists have never been sure they have observed an antiproon, which is the opposite of the very common proton, or hydrogen heart.

The new "event" was recorded in a little stack of photographic film (pellicles) flown in a Skyhook balloon from Goodfellow Air Force Base, Texas, over 19 miles up.

There were about 21 photons unaccompanied by any charged particles, and their tracks were contained in a very narrow volume. Energies were from less than 1,000,000,000 electron volts to over 20,000,000,000 electron volts.

While no process known to the scientists at the present time seems to explain all the features of the remarkable event, they suggest "that it may have been produced by an annihilation process in flight at very high energy."

The antiparticle, or negative proton, that caused the commotion was probably not produced in the atmosphere, but came from outside. A theory put forth in 1950 by Dr. Enrico Fermi, also of the University of Chicago, predicted the production of such antiparticles of such immense energies by cosmic rays outside the atmosphere of the earth.

The research by Prof. Schein with D. M. Haskin and R. G. Glasser was part of a joint program of the Office of Naval Research and the U. S. Atomic Energy Commission.

Prof. Schein and his group are continuing their measurements and expect to have more details to report later. Meanwhile they, as well as other cosmic ray investigators, will be alert to discover more such happenings in their future experiments.

Science News Letter, July 17, 1954

Science on Verge of New Release of Great Energy

► SCIENCE SEEMS to be on the verge of new discoveries that may rival the release of atomic energy.

There is the possibility of obtaining vast amounts of energy from the annihilation of matter. This would be an achievement that, when controlled, would outdistance the H-bomb itself.

The actual annihilation of matter seems to have been signaled in the burst of cosmic ray energy discovered by Prof. Marcel Schein and his colleagues.

Prof. Schein has concluded that this extraordinary event was the actual annihilation of "antimatter," an antiproton that came in from outer space with this incredibly high energy.

This is extremely big news for science. The antiproton, or negative proton, has been theoretically foreseen. If an antiproton were to combine with a proton, heart of a hydrogen atom, 2,000,000,000 electron volts of energy would be let loose. This is a thousand times as much as the energy release of the destruction of an electron.

Such possibilities are the reasons for the intensive study of cosmic rays and the building of powerful atomic particle accelerators that duplicate some of the cosmic rays.

In the exploration of atomic particles lies the possibility of understanding the constitution of the atomic nucleus, or heart of matter, and the immense reactions that take place in such short intervals of time among the minute particles.

Science News Letter, July 17, 1954

ANTIPROTON TRACK?—The annihilation of matter is seen in the most unusual cosmic ray event from which came the paired electron tracks reproduced here. The extremely small angle of spread shows the very remarkable character of the pure photon shower. The event actually started before entering the side of a stack of photographic emulsions, flown for six hours at over 100,000 feet, at a zenith angle of 66 degrees, and the tracks passed through 14 of the 18 pellicles. The photograph shows small sections, taken at arbitrary intervals along the tracks resulting from this unique event, the first of its kind.

ANIMAL NUTRITION

Sex Hormone in Feed Fattens Steers Faster

► VERY SMALL amounts of a synthetic female hormone chemical added to the feed of fattening steers produce gains as much as 35% in weight and savings of 20% in feed costs, a research team from the Iowa Agricultural Experiment Station report in *Science* (July 9).

This method of adding to meat production is an extension of experiments that showed that putting pellets of diethylstilbestrol under the skin of cattle would fatten them.

The addition of the chemical to the soybean-oil meal in the ration gets away from a human health hazard that would result if residues of the chemical remained in the meat of the cattle at time of slaughter.

Diethylstilbestrol is used medically in treating sexually underdeveloped women. It is also used in chemical caponizing of chickens, and some years ago, chicken heads fed to mink resulted in losses to the fur raisers due to accidental sterility in the mink caused by some of the chemical left in the chicken heads.

The chemical added to the steer ration amounts to the extremely small amount of five milligrams a day per steer, and this does not remain in the animal or affect the meat. No reduction in the fatness of the cattle or the quality of the meat occurred in the chemically treated animals compared with controls.

The Iowa scientists were Wise Burroughs, C. C. Culbertson, Joseph Kastelic, Edmund Cheng and W. H. Hale.

Science News Letter, July 17, 1954

STATISTICS

Aircraft Industry Tops With 823,000 on Payrolls

▶ THE AIRCRAFT industry has nosed out automobile makers as the top employer of manufacturing workers in the United States.

Figures compiled by the U. S. Bureau of Labor Statistics show that 823,000 Americans are on the payrolls of aircraft and aircraft parts manufacturers. The automobile industry employs 786,000.

The average weekly earnings for production workers in the aircraft and parts industry is $84.25, compared to $70.71 for all manufacturing industries. These are figures for March, 1954, the latest available.

The blast furnace, steel works and rolling mill industry holds third place with 594,900 workers. Makers of communications equipment, using 503,700 workers, are fourth largest manufacturing employers, and broad-woven fabric mills, with 489,900 on the payrolls, rank fifth.

Including families of workers, it is estimated that 1,900,000 Americans are directly dependent upon the aircraft and parts industry for their livelihood.

The aircraft industry ranked first once before—during World War II—but it fell to 16th place in 1946.

Science News Letter, July 17, 1954

ANTHROPOLOGY

Piltdown Hoax Clumsy, Fresh Evidence Shows

▶ FRESH EVIDENCE of the clumsiness of the Piltdown Man fraud has just reached this country, adding to the wonder of anthropologists that the perpetrator could have "gotten away with it" for so long. (See SNL, Dec. 12, 1953, p. 374.)

Dr. J. S. Weiner of Oxford University and Dr. K. P. Oakley of the British Museum report the new evidence in the *American Journal of Physical Anthropology* (March).

One of the glaring mistakes made by the unknown person who "planted" the modern and doctored ape jaw to lead scientists to presume it belonged to the older Piltdown Man skull fragments was his treatment of a canine tooth. This tooth is badly worn, and examination under a microscope shows fine up and down scratches that could not be produced in normal chewing.

Anthropologists know that apes' teeth wear down in a manner different from that of men, because the ape jaw is fastened differently.

Careful examination of the wear on this canine tooth, however, shows that the pattern is neither man-like nor ape-like, but clearly produced by hand by an abrasive.

Capping this, however, X-ray examination of the tooth showed that it was not yet completely cut through the gums, or had only just recently erupted. How, then, could it have been so badly worn?

When first reports of the "debunking" of Piltdown Man reached this country, anthropologists here were surprised at the statement that the staining of the jaw bone was considered evidence that it was a fake, since it was known that the finder, Dawson, had dipped the bone fragments in potassium dichromate not with the idea of any deception, but for the purpose of preventing deterioration. Now this is explained.

Prof. A. S. Woodward, in whose presence Dawson found the jaw bone, reported at the time that Dawson did not dip that particular bone. Yet the jaw bone is chromate stained, indicating that it was treated before it was found and, therefore, that it had been planted.

Rumors now reaching this country reveal that when the Piltdown hoax was exposed at the meeting of the Geological Society of London in November, 1953, it precipitated a violent discussion, with an old gentleman named Marston coming quickly to the defense of Dawson who had been his personal friend.

The meeting soon broke up into a series of fist fights, so strong was the feeling on both sides of the question. The fracas resulted in the expulsion of several members of the dignified scientific body.

Science News Letter, July 17, 1954

PHYSICAL CHEMISTRY

Hot Carbon Atoms Made From Nitrogen

▶ A QUICK, easy way to prepare chemicals containing radioactive carbon, widely used in medical and technical research, by transforming nitrogen compounds in an atomic pile is announced by the Institute of Nuclear Studies in Chicago.

Aniline, a compound containing nitrogen, when mixed with the hydrocarbon, pentane, and irradiated in the heavy water pile at the Argonne National Laboratory, yields heavier hydrocarbons that contain radioactive carbon atoms.

These radioactive carbons are formed by the transmutation of the nitrogen in the aniline.

This new method of making radioactive carbon tracer compounds is announced by Ariel G. Schrodt and Dr. Willard F. Libby of the University of Chicago in the *Journal of the American Chemical Society* (June 5).

Radioactive samples of heavy lubricating oils could be made very simply by this process, the authors believe. The nitrogen-containing compound would merely be irradiated for the proper time, then separated by distillation into the series of radioactive products.

These products could be used to determine what becomes of lubricating oils in automobiles, trucks or machinery under various kinds of operating conditions.

Making the radioactive tracers from nitrogen compounds in the pile would be at least as cheap as making them by any chemical means, the two University of Chicago chemists say.

Science News Letter, July 17, 1954

IN SCIENC

ECOLOGY

Whoo Says Gopher Traps Are Made, Not Born?

▶ ARE GOPHERS and mice plaguing your garden or farm? If so, attract barn owls to your farm and your days of setting out traps and poison are over.

According to J. W. Garlinghouse of the Soil Conservation Service, barn owls will quickly and efficiently solve your mouse and gopher problems. They also will destroy rats, moles, ground squirrels and brush rabbits.

Mr. Garlinghouse reports that Arthur H. Anthony, an avocado grower in Fallbrook, Calif., erected houses for these night birds throughout his orchards. The parents of one brood Mr. Anthony watched carried freshly caught rodents to their brood on the average of one every 20 minutes during nightly hunts.

The owls have not preyed on the birds or fowls which roam freely on the ranch, Mr. Garlinghouse reports in "Soil Conservation."

Mr. Anthony makes an owl house from a four-foot hollow log, at least 18 inches in inside diameter. He closes one end of the log and firmly fastens the log on a 10-foot pole.

No two houses are placed closer than 500 feet because each pair of owls requires about 10 acres of hunting ground.

A little over three months after one nest was found to be occupied by an owl family, Mr. Anthony came up with this tally of "leftover" skulls beneath the nest: 94 gophers, 89 mice, 27 kangaroo rats, seven moles, four ground squirrels, three brush rabbits and 17 unidentified mammals.

Science News Letter, July 17, 1954

OPHTHALMOLOGY

Syphilitic Eye Disease Is Cured by Cortisone

▶ CORTISONE, ADRENAL gland hormone famous for relieving painful, crippling arthritis, has been found good medicine for interstitial keratitis, an eye disease of congenital syphilis.

Cortisone treatment has changed this from "a long and painful illness" with resulting defective vision or blindness to an acute condition lasting only a few days, Dr. D. P. North of St. Mary's Hospital, London, reports to the *British Medical Journal* (July 3).

If treatment can be started early enough, eyesight need not be impaired at any time, Dr. North states. Except for very acute cases, patients can be treated as out-patients without need for staying in the hospital.

Science News Letter, July 17, 1954

CE FIELDS

TECHNOLOGY

British Developing Paint For High-Speed Aircraft

▶ A PAINT that sticks to planes flying near the speed of sound is being developed in London for the Royal Air Force.

Based on epoxy-type plastic resins, the paint withstands heat generated by air friction at these high speeds. It also presents a smooth finish aerodynamically, which may give one fighter plane a 20-mile-an-hour edge over another.

Used with a lightweight primer, two coats will yield adequate protection for the plane. It withstands temperatures up to 400 degrees Fahrenheit, which is the temperature near the exhausts of the latest jet engines. It resists spilled jet fuels, lubricants and hydraulic fluids that attack some other paints.

Developed by Cellon, the paint was rigorously tested at the company's factory near London. It also has been tried on the tail of an RAF craft, and will shortly be used to cover a complete jet plane.

Science News Letter, July 17, 1954

DENTISTRY

Teeth Drilled Painlessly By Noiseless Ultrasonics

▶ ULTRASONIC TEETH drilling without pain and audible sound has been demonstrated successfully upon human patients. The new method of preparing cavities promises to be an answer to the long search for a painless and vibrationless drill to make the dentist's chair less uninviting.

Clinical work on the new Cavitron instrument was done at Columbia University's School of Dental and Oral Surgery by Drs. Carl R. Oman and Edmund Appelbaum whose preliminary report appears in the *New York State Dental Journal* (July).

Applying a machine tool used for precision cutting of metals and hard minerals, the new dental "drill" is a device vibrated electromagnetically a distance less than a thousandth of an inch 29,000 times a second. This sets up vibrations in the cutting liquid, the particles of which do the actual wearing away of the tooth material.

No burr grinds against the tooth as in the conventional dental drill. The ultrasonic drill will not cut soft tissues and a finger or part of the gum is harmlessly vibrated by it.

Patients had cavities prepared with ultrasonic tools, with the following comments:

"No pain experienced although the tooth was originally sensitive to cold, heat and scraping with hand instruments."

"No pain whatever and the vibration of the instrument was described as 'soothing.'"

Dental school staff members tried the new tool on their own teeth and found that "the sensation of vibration and annoyance was practically absent."

The new technique can make cuts of predetermined shapes and sizes with high precision, which may make possible the pre-fabrication of inlays for tooth cavities.

Fear of the dental chair will be reduced if the new drilling method becomes used by the dental profession routinely.

The clinical work at Columbia will be extended, and the Cavitron Corporation is making instruments available to dental schools throughout the country for further experimental work. The U. S. Navy and the Royal Air Force in England have done preliminary work in the laboratory and on animals.

Science News Letter, July 17, 1954

MEDICINE

Better Drug Reported For Myasthenia Gravis

▶ A SUPERIOR drug for treatment of myasthenia gravis, a paralysis of muscles, particularly of the face, is reported in the *Journal of the American Medical Association* (July 10) by Drs. Kermit E. Osserman, Paul Teng and Lawrence I. Kaplan of Mount Sinai Hospital, New York.

The clinical trials of Mestinon bromide, or pyridostigmine, showed that this drug had fewer side reactions and, in some cases, was more effective than neostigmine, which at present is the drug of choice in treating this disease.

The physicians believe that Mestinon is a step forward in the research for the ideal therapy for myasthenia gravis, but it is not the long-acting drug which medical research is continuing to seek.

The source of the Mestinon bromide used in treating their 20 patients was Hoffmann-La Roche, Inc.

Science News Letter, July 17, 1954

OCEANOGRAPHY

Seaweed Invades Texas Gulf Coast Beaches

▶ SEAWEED IS invading the beaches of the Texas Gulf Coast to a degree that has local residents greatly disturbed. In many areas motor boats are practically useless, and swimming has become something less than a pleasure.

Local observers call the situation worse than at any time in the last 20 years.

Most of the seaweed is the brown, sargassum type that floats freely in the water without rooting itself to the ocean floor. Unusual winds and currents have swept these exceptionally large amounts of seaweed into the Gulf, Navy experts reported after visiting the area.

Officials feel the situation may be part of a natural cycle of water conditions. They anticipate no unusual seaweed problem next year.

Science News Letter, July 17, 1954

MEDICINE

Sclerosis Society Seeks Afflicted Twins for Study

▶ WANTED: IDENTICAL twins, one healthy, one afflicted with multiple sclerosis, for medical research probing the cause of this "young adult" disease.

This appeal has been made by the National Multiple Sclerosis Society as the first step in a research program aimed at tracing the hereditary and environmental causes of MS, a crippling disease that frequently attacks persons in the 20 to 40 age bracket.

The ideal "find," the Society said, would be identical twins, one of whom has been afflicted with MS and the other has not, although identical twins who both have the disease can also be used. Scientists would study both twins to try to learn what caused the diseased twin to succumb to MS.

Identical twins are most desirable because they are of the same sex, and similar in most physical characteristics, personality and intellectual traits. Fraternal twins can be of different sexes and may bear no closer relation to each other than any other brother and sister.

Although the Society is seeking identical twins for its research project, it would like to hear of all cases of twins afflicted with multiple sclerosis, as well as cases in which the disease has attacked more than one person in a family. The Society said letters should be addressed to them at 270 Park Avenue, New York 17, N. Y.

Science News Letter, July 17, 1954

ORNITHOLOGY

Mourning Dove Goes Days Without Water

▶ THE CAMEL does not have much on the western mourning dove when it comes to going without water.

Drs. George Bartholomew and William Dawson, zoologists of the University of California at Los Angeles, have found that the mourning dove, when temperatures are moderate, can go four or five days without water or succulent food and suffer no ill effects. Even in the hottest weather, it needs to drink but once a day.

They have made a special study of the bird, one of the most abundant on southwestern deserts.

The bird can drink in 10 minutes an amount of water equivalent to over 17% of its body weight. This capacity apparently enables it to drink all the water needed to eliminate any water deficits acquired during the preceding 24 to 48 hours.

The mourning dove's ability to endure dehydration and elevated body temperatures, to make up water deficits quickly and to fly long distances make it especially suited for its hot, dry environment.

Desert doves do not hesitate to bring more doves into their barren world. A single pair may produce as many as six broods during the hot spring and summer months.

Science News Letter, July 17, 1954

ASTRONOMY

Predict Sun's Effect on Radio

New theory, an upside-down-umbrella effect on the sun, may allow more accurate forecasts of shortwave radio reception. It explains shape of sun's pearly white corona.

By ANN EWING

► BY LOOKING at the sun with a special instrument, scientists expect in the near future to be able to tell more accurately whether there is going to be a blackout of long-distance radio communications.

What the shortwave radio forecaster soon may be doing is using a picture of the sun, viewed with an instrument that shows the outer atmosphere as though it were in a total eclipse, to make his prediction more accurate.

Atomic bombardment of the earth by the sun is thought to cause the earth's great magnetic storms. We know these occur by the blackouts of radio communications, the brilliant auroral displays, and the rapid movements of a magnetic needle they cause.

Scientists have suspected for a long time that actions in the corona, the usually invisible outer atmosphere of the sun, were tied in with these plaguing interruptions of shortwave radio and the mysterious "northern lights."

Now Dr. Walter O. Roberts, director of the High Altitude Observatory at Boulder, Colo., believes that a new theory of how the sun's corona is formed that he and his colleages have worked out will help radio experts forecast when magnetic storms are going to occur.

Coronal Shape Explained

This new theory, the result of nearly ten years research on the sun, also explains why the shape of the corona seen at eclipse time changes with the sunspot cycle, an 11-year period. Dr. Roberts has dubbed it the "upside-down-umbrella" theory.

Some of the most up-to-date equipment anywhere in the world for peering directly at the sun's atmosphere is at the Climax Observatory, run jointly by Harvard University and the University of Colorado. The newest instrument for spying at the solar atmosphere at non-eclipse times is known as the coronagraph. Until its invention in 1931 by the French astronomer, Bernard Lyot, astronomers were forced to make their observations of the corona during the few brief moments of a total solar eclipse.

For these fleeting seconds when the sun's light is completely blacked out by the moon, many things in the transparent atmosphere normally invisible to the unaided eye become strikingly visible.

The coronagraph, in effect, produces an artificial eclipse, permitting unwanted light from the sun's surface to be shut out at any time observing conditions are suitable. The device, however, will not work where there is dust or haze in the earth's atmosphere, hence the high altitude of Climax Observatory and other solar observing stations around the world that use coronagraphs.

The difficulty in photographing the corona, the giant, pearly white halo of the sun so spectacularly visible during totality, is that its light is about half a million times less brilliant than that of the sun. Yet it is so close to the sun that blanking out all light except the very feeble fraction of the corona is extremely difficult.

In his pioneering studies of the sun with the coronagraph, Dr. Lyot originally used the white light of the corona, that is, the light of all the rainbow colors taken together, rather than just one color, as red or green, for taking photographs.

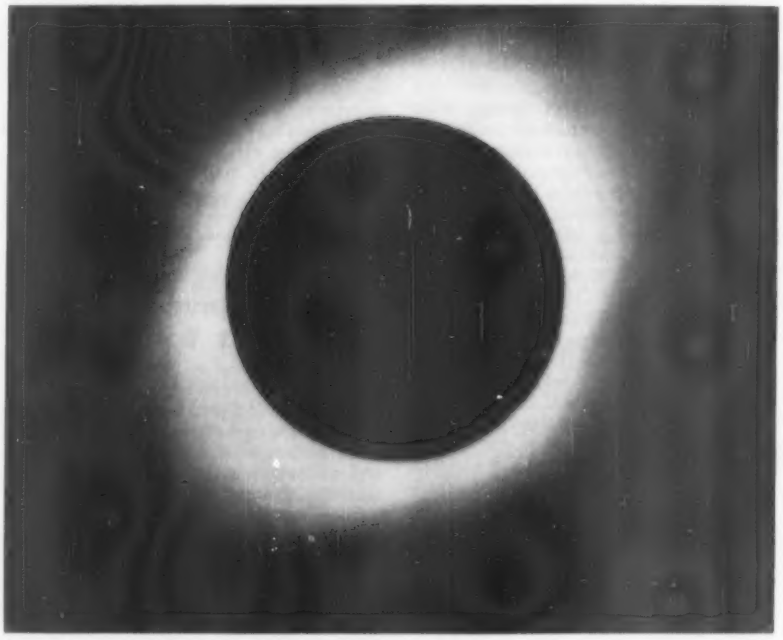
However, because it was much more difficult to catch the intricate pattern formed by the corona in white light than in either red or green light, until recently only these two parts of the full spectrum of light were used for taking daily photographs with the coronagraph. Astronomers believed that the patterns would be the same in red or green light as in white light.

Only during the last two years or so have the scientists at the Observatory realized that by looking at the sun in white light, as Dr. Lyot did, rather than in red or green light, they might discover that the coronal patterns differed.

Different White-Light Pattern

The difference, Dr. Roberts believes, is that the patterns formed in red and green light come from distinct and separate parts of the sun, the "active regions" where great sunspots are often formed, while the patterns for white light come from small gaseous jets, the spicules located all over the entire sun, but focused by the active regions.

The new theory of coronal shape and formation is thus tied in with sunspots, the large dark spots on the sun's face that, on occasion, are visible to the naked eye when properly protected. The number of spots



CORONA DURING ECLIPSE—This photograph shows the solar corona as it appeared from 13,000 feet over the southernmost tip of Hudson Bay during the total eclipse of June 30. The sun at present is near the minimum in the 11-year sunspot cycle, and the predominance of the equatorial rays is clearly shown. A new theory explains the changing shape of the corona during the sun spot cycle, and ties it in with magnetic storms on the earth.

that can be seen on the sun varies greatly in different years, showing a full cycle, from high to low and back to high again, in about 11 years.

Structure of Corona Varies

The shape and structure of the solar corona during an eclipse, either natural or man-made, varies depending on whether sunspots are at a high or low point in the 11-year cycle.

At the present sunspot minimum, there are long equatorial streamers and, in the polar regions, short plumes or tufts. When sunspots are at a maximum, the corona extends more nearly equally in all directions. Dr. Roberts believes that magnetic forces acting out from the sunspots push the corona away, forcing it to take the various patterns that are seen at eclipse time or with the coronagraph.

This action, he explains, can be pictured by thinking of the tip of a gigantic umbrella upside down at the sunspot. If there are two sunspots, separated by several hundred thousand miles, then the giant inverted umbrellas covering each would overlap and so the magnetic forces would join.

Dr. Roberts accounts for coronal streamers as being formed where the two giant "umbrellas" meet. Rays and plumes, or tufts, can also be explained by his new theory, which links the various patterns to the earth's magnetic storms.

Fortunately for us, the sun, our nearest neighbor star, is quite a stable star. Except for its relative proximity, only 93,000,000 miles, the sun is a most average star—it is neither extremely large nor extremely small, it is neither very bright nor very dim. Like all other stars in the sky, the sun is a gigantic globe of glowing gas. Its diameter is 864,000 miles, and from it radiant energy of all kinds is being poured forth at a tremendous rate, equivalent to 250,000,000 tons of matter every minute. This reaches us in the form of heat, light and other radiation.

Although scientists are pretty well agreed that the sun's lavish radiation has continued, and will continue, practically unchanged for hundreds of millions of years, only in the last 50 years or so have they begun to make systematic observations of the "other radiation," from X-rays to radio waves.

Weather-Like Phenomena

There are many similarities, Dr. Roberts points out, between the words used to describe our weather and the appearance of the sun's atmosphere, where the vast clouds of gas seem to behave in a somewhat weather-like way. Some of the terms for describing its continual motion are clouds, tornadoes, rain and cyclones.

The two principal features of the sun's atmosphere are the chromosphere with its prominences, and the corona.

"Prominences are huge clouds of atmospheric gases extending high above the solar surface," Dr. Roberts explained. "They possess a very jagged, irregular shape that is continually changing. They are supported in delicate equilibrium with the powerful force of solar gravitation, which is more than 25 times as potent as the earth's gravitation.

"The corona, on the other hand, surrounds the sun like a giant halo, and radiates a soft, pearly light. This light is partly caused by streams of electrons in the sun's atmosphere, dense enough that they scatter the brilliant sunlight that passes through them, but still very tenuous by all earthly standards."

Science News Letter, July 17, 1954

DENTISTRY

Protect Mouth in Sports

► MANY MOTHERS and probably a few fathers will cheer the University of Illinois dental scientists in Chicago who declare all schoolboys playing football and similar games should wear mouth protectors to avoid broken teeth and other mouth injuries.

More than half the injuries suffered by high school and college football players occur in the mouth area, the dentists, Drs. George Watts, Archie Woolard and Carl Singer, state. Even in grammer school, boys taking part in contact sports probably suffer an astounding number of dental injuries.

"Schools spend an average of 90 to $120 annually to outfit each football player with protective clothing, which affords him protection only for those regions in which 48% of the injuries occur," the dentists state.

"If the public is convinced of and educated to the necessity of mouth protectors in contact sports, it will insist that they be made available to the young people participating in any and all contact sports."

They made an experiment at St. Rita's high school in Chicago where they devised mouth protectors for the 26 members of the school's football team.

"Although the football season had only just begun, the team had already incurred four dental injuries before the mouth protectors became available," dentists report in the *Journal of the American Dental Association* (July).

The injuries included three broken front teeth and a fractured jaw.

"At the end of the season," they reported, "dental injuries had been reduced 100%. The opposing teams in the same games had suffered an average of two injuries in and about the oral cavity."

Vellum rubber and vellum acrylic materials were found to be satisfactory substances for mouth protectors.

Science News Letter, July 17, 1954

HEMATOLOGY

"Drumsticks" in Blood Show Sex Difference

► "DRUMSTICKS" in blood cells will tell a person's sex. If six of the "drumsticks" are found in 500 neutrophil cells of the blood, the blood came from a female. If none are found, the blood came from a male.

This "drumstick" blood test for sex is announced by Drs. William M. Davidson and D. Robertson Smith of King's College Hospital Medical School, London, in a report to the *British Medical Journal* (July 3).

The "drumstick" is a little bump, shaped like a drumstick, that juts out from one lobe of the blood cell nucleus. It is made up of chromatin, easily stainable part of the cell nucleus which is the carrier of the genes in inheritance.

The new sex-differentiating test may be of medico-legal interest and, the doctors state, has already proved valuable in checking the origin of some blood specimens prepared for microscopic examination.

Science News Letter, July 17, 1954

GENERAL SCIENCE

Number of Scientists Is Increasing in U. S.

► THE NUMBER of scientists and engineers is increasing in the United States, but the 500,000 engineers and 200,000 scientists constitute less than a half of one percent of our total population.

Dr. Harry C. Kelly of the National Science Foundation, reporting these figures in *Science* (July 2), states:

"One of the grave problems facing the nation is how to use these crucial skills and, at the same time, preserve the freedom essential to the advancement of knowledge."

Nearly half of the high school graduates who have the intelligence to do college work do not go on to college, Dr. Kelly pointed out, and an appreciable number of those who enter college do not finish.

The rate of producing well-trained scientists and engineers seems to be higher in the Soviet Union than in the United States, Dr. Kelly warned. He estimates there are more than 400,000 engineers and 150,000 scientists in the Soviet Union.

Science News Letter, July 17, 1954

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• Books of the Week •

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ADHESIVE BONDING OF METALS—George Epstein—*Reinhold*, 218 p., illus., $2.95. A practical book for engineers and technicians. A chapter is devoted to adhesives resistant to high-temperatures, such as those required for use in missiles and high-speed aircraft. This is a field to which the author has contributed.

THE ADVANCEMENT OF SCIENCE: Vol. XI, No. 41—*British Association for the Advancement of Science*, 116 p., illus., paper, 7 s., 6d. The course of current scientific research is reflected in these papers read before the British Association.

THE ANATOMY OF THE MIGRATORY LOCUST—F. O. Albrecht with foreword by J. W. Munro—*University of London (John de Graff)*, 118 p., illus., $6.00. With improvement in sanitation, the locust has superseded the cockroach as a typical insect for study by beginning students. Here is a manual intended to assist the study.

APPLIED PATHOLOGY: As an Introduction to Disease and Its Control—Charles G. Darlington and Charlotte F. Davenport with the collaboration of Albert Segenreich—*Lippincott*, 2d ed., 500 p., illus., $4.75. A textbook for nurses intended to integrate their earliest basic studies with the conditions and problems they are likely to encounter in their profession.

DIALOGUES OF ALFRED NORTH WHITEHEAD—as recorded by Lucien Price—*Atlantic Monthly—Little, Brown*, 396 p., illus., $5.00. An attempt to preserve and distribute important informal conversations with a great scientist and philosopher. The manuscript was read and approved by Dr. Whitehead.

DICTIONARY OF EUROPEAN HISTORY—William S. Roeder with an introduction by Harry Elmer Barnes—*Philosophical Library*, 316 p., $6.00. Events and names arranged alphabetically for ready reference. This work is designed especially to help understand the situation in contemporary Europe.

GARDENING WITH NATURE: How To Grow Your Own Vegetables, Fruits and Flowers by Natural Methods—Leonard Wickenden with introduction by Paul Sears—*Devin-Adair*, 392 p., illus., $4.95. A book for gardeners with the emphasis on preparation of the ground and the use of compost.

HUMAN PHYSIOLOGY—W. B. Youmans—*Macmillan*, 481 p., illus., $6.00. Aim of this text is not just to present facts, but to provide an understanding of their meaning.

HYDRAULIC SYSTEMS AND EQUIPMENT — R. Hadekel—*Cambridge University Press*, 224 p., illus., $3.75. The greater part of this book for engineers, designers and students is devoted to specific discussions of design problems.

THE INSTITUTIONS OF PRIMITIVE SOCIETY: A Series of Broadcast Talks—E. E. Evans-Pritchard and others—*Free Press*, 107 p., $2.50. Intended to inform the public about what modern anthropologists are working on and accomplishing.

ISOTOPIC TRACERS: A Theoretical and Practical Manual for Biological Students and Research Workers—G. E. Francis, W. Mulligan and A. Wormall with a foreword by G. Hevesy—*University of London (John de Graff)*, 306 p., illus., $7.00. Intended as a practical manual for use in the laboratory rather than the library.

THE JUDGMENT OF HISTORY—Marie Collins Swabey—*Philosophical Library*, 257 p., $3.75. In a day when the "masters of the present" attempt, the author says, to expunge and rewrite the records in line with their future plans, here is a work which tries to state the case for historical truth.

MATHEMATICAL THINKING IN THE SOCIAL SCIENCES—Paul F. Lazarsfeld, Ed.—*Free Press*, 444 p., illus., $10.00. Although mathematics cannot be claimed to have led to any important discoveries in the social sciences, the editor believes that it does contribute to clearness of thinking.

MEDICINE AND SCIENCE: Lectures to the Laity, No. XVI, New York Academy of Medicine—Iago Galdston, Ed.—*International Universities Press*, 159 p., illus., $3.00. Although addressed to the laity, these lectures are authoritative and are contributed by such outstanding researchers as Hans Selye, Paul Rosch, David Levy, Norbert Wiener, Harold G. Wolff, Paul R. Burkholder and John E. McKeen.

NOISE—Aldert van der Ziel—*Prentice-Hall*, 450 p., illus., $10.35. Concerned with noise in electronic devices.

THE PERMANENT REVOLUTION IN SCIENCE—Richard L. Schanck—*Philosophical Library*, 112 p., $3.00. A philosophical work.

PYGMIES AND DREAM GIANTS—Kilton Stewart —*Norton*, 295 p., illus., $3.75. An anthropologist writes for the general reader about his own experiences among the primitive peoples of Luzon.

THROUGH MALAN'S AFRICA—Robert St. John — *Doubleday*, 317 p., $3.95. An American newspaper man here "covers" a part of the world where the scene is being laid for very explosive racial conflicts.

TOMORROW IS ALREADY HERE—Robert Jungk, translated by Marguerite Waldman with introduction by Herbert Agar—*Simon and Schuster*, 241 p., $3.50. A young German-born journalist, with a history of much anti-Nazi activity, here attempts to expose some totalitarian influences he sees as emerging in connection with work on the atom bomb and other super-modern weapons.

WAYS OF THE ANT—John Crompton—*Houghton-Mifflin*, 242 p., illus., $3.50. A readable book, written to interest laymen.

Science News Letter, July 17, 1954

TECHNOLOGY

Steel Wire, Nylon Cord Protect Conveyor Belts

► STEEL RIBBON and nylon cord now are being placed in conveyor belts to lengthen belt life by as much as 50%.

The steel ribbons are inserted crosswise in the belts at three-foot intervals. The ribbons stop full-length slashes that occur when a sharp object jams and rips the moving fabric, B. F. Goodrich engineers in Akron, Ohio, report.

Run lengthwise through the belt, the nylon cords resist snags and add strength to the belt.

Science News Letter, July 17, 1954

METALLURGY

Metal Sandwich Stops Molybdenum Oxidation

► A WAY has been found to stop the oxidation of strategic molybdenum and tungsten in parts of hot machines such as jet engines and gas turbines.

The metals are sandwiched in aluminum and can withstand temperatures as high as 3,600 degrees Fahrenheit.

Inventors Marshall G. Whitfield and Victor Sheshunoff, both of Garden City, N. Y., assigned their rights in patent 2,682,101 to Whitfield & Sheshunoff, Inc.

Parts made of tungsten and molybdenum alloys are "theoretically promising" in industry, the inventors report, but have proved "very disappointing" in general practice. Both metals oxidize in air so rapidly that the part's life expectancy may not exceed 300 hours. Some critically important structural elements would have to be replaced frequently at great trouble and expense.

By hot-dipping the alloys in molten aluminum, a protective jacket is applied that guards the metal from oxidation at high temperatures.

Science News Letter, July 17, 1954

NEUROLOGY

Wry Neck, Eye Winking Relieved by New Drug

► AN ANTI-DEPRESSION drug has surprised doctors by giving relief to two patients with wry neck and one with eyes that winked too much.

These and other results with the drug were announced by Dr. Howard D. Fabing of Cincinnati at the meeting of the American Neurological Association in Atlantic City, N. J.

The drug has the chemical name of alpha-(2-piperidyl) benzhydrol hydrochloride.

The winking condition, known medically as blepharospasm, afflicted a 60-year-old housewife so that she could not write or sew because of her almost constantly closed eyes. How she improved on daily doses of the new drug is shown by the fact that she has sewed a quilt and has undertaken a job of addressing envelopes.

A 43-year-old plumber who suffered from wry neck for seven years is another patient helped by the new drug. Recently this man's condition was such that he could not turn his head to the right of the center of his body. On daily doses of the drug he can turn it fully to the right and the twisting to the left has been reduced to a minimum.

Three cases of narcolepsy, or sleep epilepsy as it is also called, have responded well to the drug.

It has qualities similar to the amphetamines, or so-called pep pills, for patients in depressions, but does not interfere as much with sleep and appetite and does not have blood pressure raising effects.

Science News Letter, July 17, 1954

PSYCHOLOGY

Juvenile Delinquency Up

Just as there is no one cause for juvenile delinquents, so there is no one cure, but youngsters can be helped by being forced to go to a psychiatrist or guidance clinic.

► JUVENILE DELINQUENCY is increasing in spite of the fact that families in general have more money and live in better houses, children have more play facilities and more psychiatric attention is being given to the problem.

Parents, particularly those whose consciences are a "shambles," are to blame, but so are courts that "coddle" the young delinquent and a society in which boys are kept in school beyond the age when they are interested in learning or capable of profiting by what they are taught.

Most delinquents can be greatly helped if the parents cooperate and if the youngsters' own resistance and suspicion can be overcome.

Juvenile delinquents are not, for the most part, neurotic, mentally sick or mentally retarded, or psychopathic. They may come from slums and broken homes, and from homes in good neighborhoods where parents are living together.

Since there is no one cause for delinquency in teen-agers, so there is no one cure or panacea.

These are the conclusions from a special session on the subject held at the meeting of the American Medical Association in San Francisco.

The youngsters can be helped even when they are forced to go to a psychiatrist or child guidance clinic, Dr. Frank J. Curran of the University of Virginia declared at the meeting.

This is contrary to the belief of many psychiatrists that the patient can be helped only when he wants and seeks help.

When terms of probation included regular attendance at the clinic, Dr. Curran found that many of the teen-agers were happy to feel compelled to come for treatment.

Often they really want help, but are afraid of losing face with their friends if they voluntarily go to a "nut doctor," Dr. Curran said in speaking of his experience while on the staff at Bellevue Hospital, New York, where he saw many court cases.

Of 300 such severely disturbed teen-age delinquents, more than two-thirds made a satisfactory adjustment in the community after the 30- to 60-day stay for treatment in the hospital. Only 10% were in correctional institutions when Dr. Curran made his follow-up study.

To aid these youngsters, doctors, social workers, teachers and psychologists must team up. Physical defects must be remedied, reading and arithmetic difficulties must be corrected, and the parents and youngsters must be helped to change their attitudes.

Working with the children in groups is particularly effective. In the Bellevue Clinic, teen-age boys wrote and acted in plays; were encouraged to do art work, such as drawing, painting and clay modeling, and to engage in other group activities.

The plays often were on such themes as "Crime Doesn't Pay." Discussion of the plays, drawings and paintings, lead by the psychiatrist, got the boys talking about their problems, even though they were at first suspicious and unwilling to talk.

From the group discussions they found others had the same problems as themselves, and this gave each more confidence to talk and get help.

Taking part in the delinquency conference besides Dr. Curran were Drs. Adelaide M. Johnson, Mayo Clinic, Rochester, Minn.; Harry Bakwin and Leona Baumgartner, New York; Bertram M. Beck, Washington, D. C.; Charles Bradley, Portland, Me., and J. Cotter Herschberg, Topeka, Kans.

Science News Letter, July 17, 1954

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BIOLOGY

Eye Has Compartments

Single quantum of light acting on a single molecule of visual pigment can activate eye, Dr. George Wald proposes in a new theory he tested by use of a glass replica of the eye.

▶ THE HUMAN eye is such a superbly organized compartmented structure that it is activated by a single quantum of light shining on a single molecule of visual pigment.

This new idea of Dr. George Wald of Harvard University is reported in *Science* (June 25).

The theory explains the chemistry of vision and why the sensitivity of the dark adapted eye is lost in such big jumps when exposed to such small amounts of light.

The rods of the eyes, which are the cells used in night vision, are made up of compartments, Dr. Wald believes. Each compartment contains a considerable amount of rhodopsin, the visual pigment. Any single molecule of the rhodopsin, on absorbing a single quantum of light, can "discharge" the compartment.

This compartment cannot then take any further part in the visual process until all its rhodopsin is restored. It can go on absorbing light, just as before, but the light will have no other effect than to delay the eventual recovery of the compartment.

To test out his theory, Dr. Wald had a replica of a human eyeball blown from glass. This has a short neck closed with a ground-glass stopper and through this neck it can be filled with water.

The "water eye" closely mimics the optical system of the human eye. On the front surface is a spherical blister like the cornea of the eye.

The "water eye" was placed behind a screen that holds a disk pierced with circular holes of various sizes to serve as pupils. Close against the back of the "water eye," which is slightly flattened, is a small absorption cell containing a solution of cattle rhodopsin.

With this apparatus, Dr. Wald measured the rate at which the rhodopsin was bleached when exposed to light.

Then the place of the "water eye" was taken by a human subject. With eyes previously dark adapted, she looked through the artificial pupils. She was then exposed to light and her dark adaptation measured. Measurements from both the human eye and the "water eye" were used to determine the rate of bleaching of rhodopsin.

Exposure of the eye to 10 millilamberts of light for five seconds raises the threshold, that is, decreases sensitivity, of the eye about 8.5 times. It bleaches a relatively small amount, at most 1,200 molecules of rhodopsin per rod, Dr. Wald found. A lambert is a unit of light brightness.

Reason why our ability to see in dim vision is recovered at such a slow rate—it takes about 30 minutes—is also explained by Dr. Wald's experiments. After high light adaptation, no compartment comes back into function until its last rhodopsin molecule has been regenerated.

Science News Letter, July 17, 1954

GOLF: Your LEFT SHOULDER makes the amazing difference!

One of the most startling discoveries to emerge from wide research in the golf swing is that your game literally hinges on your left shoulder!

How this is so and how to use this great discovery to improve your own game beyond all expectation in a matter of short weeks is set forth in **THE GOLF SECRET** by Dr. H. A. Murray—a medical doctor, golfer, and golf researcher, who has applied his expert knowledge of anatomy in this sweeping and utterly different study of the golf swing.

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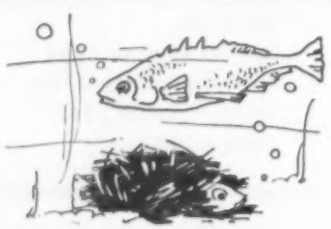
ICHTHYOLOGY

NATURE RAMBLINGS



Sticklebacks

▶ STICKLEBACKS ARE small fish with sharp spines sticking up on the back. These spines vary in number from two or four to nine, depending on the species.

The stickles bristling from the fishes' backs have a distinctly thorny and belligerent appearance. This is not a deception, since sticklebacks are not at all backward in using the spines as deadly weapons, especially during the breeding season.

This takes place during the spring and early summer. At this time, the males take on bright nuptial colors with which to be-dazzle their future mates.

Full of confidence in the magnetism of his new courting colors, the male first sets to work building a home. Properly speaking, it is not a home but a love nest, for it is destined to be no more than the transitory hideaway where a stickleback brings to fruition his mid-summer "dream."

Transistory or no, the male builds the nest with extreme care. Bits of roots and stems of aquatic plants are his building blocks, and for mortar he uses a sticky substance secreted in his kidneys which he wipes off by swimming against the part to be cemented.

The nest so constructed is barrel- or muff-shaped. The fish constantly tests the strength of his structure, butting against it here and there, reinforcing any section that dissatisfies him. To secure the nest he scoops up sand in his mouth and scatters it about the floor of the nest.

When the nest is finally just the way he wants it, possibly after as much as several days' steady work, the stickleback goes in search of a mate. When he finds one, he leds her to his nest and then either gently coaxes or rudely pushes her inside. There she lays her eggs and swims off, and the male promptly fertilizes them.

And then with the same singlemindedness that has characterized all his actions up to now, off he goes to find another mate, to repeat the cycle again, and again, and possibly still again, until there are enough eggs to satisfy him.

From then on until the small fry are big enough to fend for themselves, Mr. Stickleback keeps an endless vigil. He circles the nest, keeping it in repair, and violently attacking any other fish, large or small, that ventures in the vicinity.

Even after the eggs hatch out, he continues the watch, keeping the tiny offspring in the nest, warding off all dangers. It is only when the young sticklebacks have become strong swimmers and stand some chance of eluding capture that the sentinel indifferently takes leave forever.

Science News Letter, July 17, 1954

VITAL STATISTICS

Birth-Death Imbalance Threatens Technical Aid

▶ ECONOMIC GAINS due to technical aid to so-called "underdeveloped countries" are gravely endangered by a lack of balance between births and deaths, Robert C. Cook, director of the Population Reference Bureau, Washington, has warned.

While technical programs are drastically reducing death rates almost overnight by use of modern medicine and technology, traditionally high birth rates remain high because no effort is made to lower them, he pointed out.

The economic gains are gravely endangered in those areas and the plight of the people may worsen rather than improve.

Science News Letter, July 17, 1954

GENERAL SCIENCE

Professions in Russia

▶ SCIENTISTS, EDUCATORS, engineers and technicians have increased in the Soviet population during the period from 1940 to 1953 by 138%, compared with a 42% increase in the number of all workers.

Dr. Nicholas DeWitt of Harvard's Russian Research Center predicts in *Science* (July 2) that this expansion of U.S.R.R. professional and scientific personnel will continue into the future.

By 1956, annual graduations from higher educational establishments should be about double those of 1950, or 330,000 to 370,000 annually, Dr. DeWitt has determined from announced Russian plans. By 1956, there will be about 50% more Soviet engineers graduated annually than in 1950, or somewhat more than 45,000.

Scientists in research establishments should also double to about 120,000 by 1956. Because there has been a rapid expansion in the Soviet secondary school enrollment, Dr. DeWitt believes there is a substantially sound foundation for even further expansion of Soviet higher education after 1956.

This Soviet technical and educational advance "permits no complacence on our part," Dr. DeWitt warns.

There have been notable postwar shifts in the occupational distribution of Soviet professionals. Proportionately more teachers and professors and medical professionals are trained. The production of engineers has, nevertheless, continued to remain at a high level.

Of the 1,785,000 Soviet professionals with completed higher education in 1952, 467,000, or 26.2%, were engineers; 748,000, or 41.9%, were teachers and professors; 300,000, or 16.8%, were medical; 161,000, or 9%, were agricultural specialists, and 109,000, or 6.1%, were socioeconomic professionals. In 1940, there was a total of 848,000 such professionals.

The number of women among Soviet professionals has increased to about half in 1952, compared with about a third in 1940. There were large increases in the number of women in the fields of medicine and education.

In 1952, the Soviet Union had 2,900 research establishments, compared with 1,560 in 1940, employing twice as many research scientists, or about 68,000, about a third of whom are engaged in applied and technical research.

There were 3,715,000 semiprofessionals with completed secondary specialized education in the U.S.S.R. in 1952.

Science News Letter, July 17, 1954

GENERAL SCIENCE

Shun Government Work

▶ THE FEDERAL government needs a strong recruitment program if it is to attract sufficient scientific talent to meet manpower needs.

Even with this, it may be difficult to induce college graduates to enter government employment.

This is the conclusion reached from a study made by Drs. Lowell H. Hattery and Charles M. Hersh of American University, Washington, on the attitudes of senior students, faculty and placement officers in five colleges and universities.

The study was conducted in the spring of 1952, before the Oppenheimer decision, which might be expected to influence science students against accepting government employment.

Institutions studied included Johns Hopkins University, Oberlin College, Purdue University, Syracuse University and West Virginia University, Drs. Hattery and Hersh report in *Science* (July 2).

Although 38% of the 660 seniors questioned had already accepted jobs in late April and early May when the study was made, only one out of 20, or 5.2%, had chosen federal employment. Three out of four had taken jobs in industry.

At one institution, 45 students had been signed up for jobs. Of these, none had chosen federal employment.

Science majors were the least likely of the students studied to go into government employment. About four percent of the science majors, five percent of the engineering majors and 14% of the social science majors decided to take their employment with the government.

Faculty members were slightly less favorable to industrial employment than were their students, but nevertheless were much more favorable to industrial employment than to government jobs.

Students who had picked industrial jobs and also those who had signed up for government employment were asked to give their reasons.

Those who picked industrial jobs liked the higher pay, said that students with the greatest ability were more likely to enter industry, thought that there was a greater incentive to work and that the pay was more dependent upon the ability of the employee in industry than in government.

Those who had chosen government employment had done so because they liked the more liberal vacation and sick leave policy, because the government provided better equipment for technical work, and because they felt that the employment was more likely to be permanent than industrial employment.

Science News Letter, July 17, 1954

Questions

ANIMAL NUTRITION—How does sulfur affect sheep's wool? p. 38.

□ □ □

ASTRONOMY—What "first" have Yerkes astronomers scored? p. 37.

What is a coronagraph? p. 42.

□ □ □

MEDICINE—How does the palm indicate anemia? p. 38.

□ □ □

PHYSICS—What is an antiproton? p. 39.

□ □ □

TECHNOLOGY—Why do high-speed aircraft need special paint? p. 41.

□ □ □

Photographs: Cover, Fremont Davis; p. 35, U. S. Air Force; p. 37, General Electric Company; p. 38, Walter R. Fleischer-Harvard University; p. 39, Marcel Schein-University of Chicago; p. 42, American Airlines-Hayden Planetarium Eclipse Expedition; p. 48, Kaywoodie Co.

STATISTICS

Brides and Grooms Are Now Closer to Same Age

▶ AN INCREASING tendency for American men to marry girls or women near their own age is noted by statisticians of the Metropolitan Life Insurance Company in New York.

This may be due to the current trend toward early marriages, when the difference between the groom's age and that of his bride is at a minimum.

Figures on ages at marriage in Massachusetts, which may or may not closely reflect the national pattern, show that during 1947-1951 men in the age group from 20 through 24 years—averaging about 22½ years—married women whose average age was 21½ years, a difference of about one year.

Grooms in their 30's took brides about five years their junior, on an average. The difference increased to eight years if the man was marrying in his middle 50's. In the relatively few marriages where the groom was past 70, the average age of the bride was about 10 years less than his.

Whether or not a groom had been previously married has little influence on the age of the bride he chooses. Bachelors 20 to 24 years of age took brides whose average age was 21.5 years, which compares with 21.9 years for brides of the men who had been wed before.

The average age of brides, however, varies appreciably with their prior marital status. For example, spinsters who married bachelors in the age group 20 to 24 years were 21.4 years old, on an average, whereas the corresponding divorcees and widows were 25.1 years of age.

Science News Letter, July 17, 1954

• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 735. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

NYLON-RAYON CARPET has been woven to yield longer wear and easier maintenance. The easy-to-clean carpet is springy under foot and is available in 9- and 12-foot widths in 10 patterns.

Science News Letter, July 17, 1954

JET NOZZLE for garden hoses squirts a straight stream of water nearly twice as far as ordinary nozzles. A twist of the attachment's head converts the stream into a fine fog, useful in fighting fires, as well as for garden purposes. The nozzle is made of a rust-proof aluminum alloy, stainless steel and plastic.

Science News Letter, July 17, 1954

MAGNETIC PLUG gripper is a small rubber sleeve that fits over the plug of standard electric cords. This sleeve permits the user to wrap the cord neatly around an appliance, such as a toaster, and stick the plug securely against the appliance where it is held by tiny magnets.

Science News Letter, July 17, 1954

CALCULATING EXPOSURE meter reads the light and automatically registers nine shutter and lens combinations. A built-in calculator frees the user from sliding scales and mental arithmetic. The German-made meter also contains a "red flag" signal that tells the photographer when light level is too low for shooting.

Science News Letter, July 17, 1954

CURVED PIPE stem lets weak-toothed or toothless smokers enjoy their pipes without strain on tooth or gum. The pipe's curved stem rests against the chin, as shown in the photograph, eliminating the need to grip the pipe tightly in the mouth.

Science News Letter, July 17, 1954

GRIPPING POWDER helps to stabilize scatter rugs, ashtrays, bath mats and other slippery items. Rubbed into the reverse side, the powder is said to reduce their "slideability" without marring floors.

Science News Letter, July 17, 1954

KEY OPENER flips pry-off caps from vacuum-packed glasses and jars. Because the wide hook on the new gadget removes the cap without bending or twisting it, the lid can be used to reseal the container.

Science News Letter, July 17, 1954

INTERCOM SYSTEM enables the boss to interrupt an employee's intercom conversation when he needs to speak to that employee immediately. When the boss is finished, the original parties are automatically reconnected. The boss cannot eavesdrop; a light flashes on the employee's instrument whenever the boss tunes into his conversation.

Science News Letter, July 17, 1954

Do You Know?

European countries produce more than two-thirds of the world's *cheese*.

Record *altitude* for jet bombers is 63,000 feet.

Mange, a skin *disease* of animals, causes $5,000,000 worth of damage to cattle each year.

The Florida tree snail is by far the most beautiful of land *snails* in North America.

The *wheat* surplus held by the federal government would provide each family in the U. S. with 1,400 loaves of bread.

The length of *blood vessels* in an average person totals about 12,000 miles.

The average *sea otter* eats one-third its own weight, or about 25 pounds, in a day.

Physicians through the ages have prescribed *wine* for the treatment of a host of diseases; one of the chief reasons for wine's value is that it contains significant quantities of certain important food elements, in a form readily assimilated by the body.

Present known world *uranium* reserves indicate a potential world atomic fuel reserve at least 25 times greater than our fossil fuel supply in the forms of coal, oil or gas.

Production of raw *plastics* in 1953 reached 3,000,000,000 pounds, almost 11 times more than 1940's production level.

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